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| APPLICATION NO.                        | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|-----------------------|---------------------|------------------|
| 10/816,945                             | 04/05/2004  | Ivar Ivarsen Primdahl | H0610.0362/P362     | 2413             |
| 24998                                  | 7590        | 05/04/2005            | EXAMINER            |                  |
| DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP |             |                       | PRUCHNIC, STANLEY J |                  |
| 2101 L Street, NW                      |             |                       | ART UNIT            |                  |
| Washington, DC 20037                   |             |                       | PAPER NUMBER        |                  |

2859

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                 |  |
|------------------------------|--------------------------------------|---------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/816,945        | Applicant(s)<br>PRIMDAHL ET AL. |  |
|                              | Examiner<br>Stanley J. Pruchnic, Jr. | Art Unit<br>2859                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/7, 9/23, 11/18/04 (3 sheets)</u>  | 6) <input type="checkbox"/> Other: ____                                     |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character(s) "1,2,3,4,5" have each been used to designate different parts/elements/features in Figs. 1 and 3.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

3. The disclosure is objected to because of the following informalities: Referring to the description of Fig.1 (Para. 0035) and of Fig.3 (Para. 0041) in the specification, the same reference characters have been used to describe different features of the invention. Appropriate correction is required.

### *Claim Objections*

4. **Claims 2-5, 9 and 10** are objected to because of the following informalities:
  - In **Claim 2**, in Lines 1-2, "tip of the thermowell" lacks antecedent basis.
  - Similarly, in **Claim 3**, Lines 3-4, "the tip of the thermowell" lacks antecedent basis.
  - Similarly, in **Claim 4**, Lines 1-2, "the tip of the thermowell" lacks antecedent basis.
  - In **Claim 3**, in Line 3, "reactor wall" lacks antecedent basis. Perhaps a phrase such as --a reactor including a reactor wall-- should be inserted earlier in order to clearly describe the invention.
  - Also in **Claim 3**, "the process stream" lacks antecedent basis.

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- In **Claim 4**, Line 2, "inner surface" lacks antecedent basis.
- In **Claim 5**, "the temperature is measured" lacks antecedent basis since no step of temperature measurement has been positively claimed. Moreover the claim does not require a temperature to be measured by the claimed thermocouple.
- In **Claim 9**, "the measured process stream" lacks antecedent basis.
- Also, **Claim 9** lacks a concluding period (.).
- Perhaps in **Claim 10**, in Line 2, the phrase --the thermowell-- should be inserted before "being" in order to clearly indicate which element is covered by the catalytic materials.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-9 provide for the use of a thermocouple, but, since the claim(s) do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 1-9 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

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of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 2 recites the broad recitation "a layer thickness of 0.2-5mm", and the claim also recites "preferably 0.5-2.0 mm", which is the narrower statement of the range/limitation.

For consideration as to the merits, regarding the limitation in **Claim 2**, "preferably 0.5-2.0 mm": this limitation is not given patentable weight, since it does not further limit the claimed range of layer thickness.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 3 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6333011 B1 (Schliephake; Volker *et al.*, hereinafter **SCHLIEPHAKE**).

**SCHLIEPHAKE** discloses a method and instrument for measurement of high temperatures of a process stream as claimed by Applicant in Claims 1, 3 and 10, the instrument comprising

a thermocouple 14 inserted (and arranged; Col. 5, Lines 1-17) in a thermowell 18 ("protection sleeve 18"), the thermowell 18 being at least partly covered by a layer of a catalytic material (Col. 1, Lines 12-47), the catalytic material being active in at least one endothermic reaction (Col. 3, Lines 27-38) as claimed by Applicant.

Further regarding **Claim 3**, the thermowell is installed in a reactor (tubular reactor R), having been inserted axially in the center of the bed (Col. 7, Lines 20-55), considering the top of the tube R will have a wall in order to enclose the tubular reactor.

10. Claims 1, 3 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,913,058 A (**NISHIO et al.**, hereinafter **NISHIO**).

Regarding Claims 1 and 10: NISHIO discloses a method and instrument for measurement of high temperatures of a process stream (e.g., in the exhaust pipe of a gasoline engine; Fig. 4; see Col. 4, Lines 65-67; and Cols. 5-6) comprising a thermocouple 1 (Col. 3, Lines 51-67; Figs. 1 and 5) inserted and arranged in a thermowell 7 (Col. 4, Lines 5-10), the thermowell being at least partly covered by a layer (Col. 4, Lines 65-67) of a catalytic material (platinum layer 13; Col. 5, Lines 30-41), the catalytic material being active in at least one endothermic reaction as claimed by Applicant.

The limitation "the catalytic material being active in at least one endothermic reaction" is not considered limiting, since a catalytic material (an platinum, in particular) may be active for an endothermic reaction, an exothermic reaction, or both types of reaction, depending on the constituents of the reacting species. Since no particular reactions are positively claimed, the material platinum, as disclosed by NISHIO, meets the claimed limitations.

Further regarding **Claim 3**, the thermowell is installed in a reactor, where a chemical reaction occurs, e.g. at "A" in Fig. 4., inserted in the pipe hole, installed with the threads as shown in the Figs.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **SCHLIEPHAKE** in view of US 5143647 A (Say; Geoffrey R. *et al.*, hereinafter **SAY**).

**SCHLIEPHAKE**, to summarize, discloses all the limitations as claimed by Applicant in Claims 5-9, as described above in Paragraph 9 as applied to Claims 1, 3 and 10 further including the limitations wherein the tip of the thermowell is embedded in the catalytic bed.

**SCHLIEPHAKE**, as described above, does not explicitly disclose the method wherein the temperature is measured in a process stream undergoing a steam reforming reaction in a catalytic bed, or wherein the temperature is measured upstream of the catalyst bed, or wherein the steam reforming reaction is carried out in an autothermal reformer, or explicitly wherein the catalytic material is active in catalyzing steam reforming reactions, or wherein the measured process stream has a temperature of 1000-1500 degrees Celcius as claimed by Applicant in Claims 5-9.

**SAY** discloses it is well known in the art of fluid bed processes to use the endothermic steam reforming reaction for production of synthesis gas (Col. 1, Lines 23-55). The process is known to be combined with an exothermic process in an autothermal reformer. These reactions are found to result in temperatures including the claimed range of temperatures.

**SAY** is evidence that ordinary workers in the field of fluid bed processes would recognize the benefit of using autothermal reformer and process as taught by **SAY** for the process of **SCHLIEPHAKE** in order to convert raw materials into synthetic fuels.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute autothermal reformer and process as taught by **SAY** for the process of **SCHLIEPHAKE** in order to convert raw materials into synthetic fuels.

14. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **SCHLIEPHAKE** in view of US 5005986 A (Najjar; Mitri S. *et al.*, hereinafter **NAJJAR**).

**SCHLIEPHAKE**, to summarize, discloses all the limitations as claimed by Applicant in Claim 4 and 9, as described above in Paragraph 9 as applied to Claims 1, 3 and 10 further including the limitations wherein the tip of the thermowell is embedded in the catalytic bed.

**SCHLIEPHAKE**, as described above, does not disclose the tip is behind an inner surface of the reactor wall as claimed by Applicant in Claim 4.

**NAJJAR** discloses a method for measurement of high temperatures of a process stream wherein a thermocouple arranged in a thermowell 32 is located within a hole penetrating a reactor wall wherein the tip of the thermowell is 20-50 mm (NAJJAR disclosed 0 to 1.5 inches, which is 0 to 38.1 mm; Col. 4, Lines 53-62) behind the inner surface 14 of the reactor wall and the device may be used over a temperature range of up to 1000 F to 2400 F.

**NAJJAR** further discloses that it is advantageous to locate the tip behind the inner surface 14 of the reactor wall in order to benefit from avoiding damage to the thermowell caused by attack from reaction products, e.g., slag.

**NAJJAR** is evidence that ordinary workers in the field of gas synthesis would recognize the benefit of using the recessed thermowell as taught by **NAJJAR** for the embedded thermowell of **SCHLIEPHAKE** in order to avoid damage to the thermowell by reducing exposure to products of the gas synthesis.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the recessed thermowell for the embedded thermowell of **SCHLIEPHAKE** in order to void damage to the thermowell by reducing exposure to products of the gas synthesis as taught by **NAJJAR**.

### **Conclusion**

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in a form PTO-892 and not mentioned above disclose related temperature measurement devices and methods related to processing gas streams.

- US 5595719 A (Ul-Haque; Israr et al.)



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- US 20010055560 A1 (Schiodt, Niels C. et al.)
- US 5232517 A (Hilborn; Howard L. et al.)
- US 5192132 A (Pelensky; Martha T.)
- US 2383729 A (LOY JOHN W)
- US 6277894 B1 (Agee; Kenneth L. et al.)
- US 20020085967 A1 (Yokota, Koji)
- US 20030172590 A1 (Bhattacharyya, Alakananda et al.)
- US 5429809 A (Stahl; Henrik O. et al.)

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr., whose telephone number is **(571) 272-2248**. The examiner can normally be reached on weekdays (Monday through Friday) from 7:30 AM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached at **(571) 272-2245**.

The **Official FAX** number for Technology Center 2800 is **(703) 872-9306** for **all official communications**.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the official USPTO website at <http://www.uspto.gov/> or you may call the **USPTO Call Center** at **800-786-9199** or 703-308-4357. The Technology Center 2800 Customer Service FAX phone number is (703) 872-9317.

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Private PAIR provides external customers Internet-based access to patent application status and history information as well as the ability to view the scanned images of each customer's own application file folder(s).

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Stanley J. Pruchnic, Jr.  
5/2/05

**GAIL VERBITSKY**  
**PRIMARY EXAMINER**